

Amendments to the Claims:

1-2. (Cancelled)

3. ~~The method of claim 1, further comprising the step of:~~ In a storage network, a method to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first electronic device in said storage network to log one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition in the storage network;

determining at said first electronic device when said detected error condition no longer exists in the storage network;

upon determination that said detected error condition no longer exists, instructing said first data replication facility of said first electronic device to replicate data corresponding to the one or more writes identified in said log to generate a second replica;

outputting said second replica in accordance with a communication protocol from said first electronic device to a second data replication facility of a second electronic device of said physically remote storage device in said storage network to update said first replica;
and

instructing said first data replication facility of said first electronic device to automatically output said second replica to said second replication facility once generation of said second replica is complete.

4-8. (Cancelled)

9. (Currently Amended) ~~The method of claim 1,~~ In a storage network, a method to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first electronic device in said storage network to log one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition in the storage network;

determining at said first electronic device when said detected error condition no longer exists in the storage network;

upon determination that said detected error condition no longer exists, instructing said first data replication facility of said first electronic device to replicate data corresponding to the one or more writes identified in said log to generate a second replica;

outputting said second replica in accordance with a communication protocol from said first electronic device to a second data replication facility of a second electronic device of said physically remote storage device in said storage network to update said first replica; and

wherein said outputting from said first data replication facility of said first electronic device to said second data replication facility of said second electronic device occurs in a synchronous manner.

10. (Currently Amended) ~~The method of claim 1,~~ In a storage network, a method to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first electronic device in said storage network to log one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition in the storage network;

determining at said first electronic device when said detected error condition no longer exists in the storage network;

upon determination that said detected error condition no longer exists, instructing said first data replication facility of said first electronic device to replicate data corresponding to the one or more writes identified in said log to generate a second replica;

outputting said second replica in accordance with a communication protocol from said first electronic device to a second data replication facility of a second electronic device of said physically remote storage device in said storage network to update said first replica; and

wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

11. (Cancelled)

12. (Currently Amended) ~~The method of claim 1,~~ In a storage network, a method to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first electronic device in said storage network to log one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition in the storage network;

determining at said first electronic device when said detected error condition no longer exists in the storage network;

upon determination that said detected error condition no longer exists, instructing said first data replication facility of said first electronic device to replicate data corresponding to the one or more writes identified in said log to generate a second replica;

outputting said second replica in accordance with a communication protocol from said first electronic device to a second data replication facility of a second electronic device of said physically remote storage device in said storage network to update said first replica;
and

wherein said log comprises a bitmap holding one or more bits, wherein each of the one or more bits in the bit map indicates a storage location written to on the local storage device.

13. (Cancelled)

14. (Currently Amended) ~~The method of claim 13, further comprising the steps of:~~ In a computer network having a plurality of programmable electronic devices, wherein each of said plurality of programmable electronic devices operates as a host device for a data replication facility for replicating data among said plurality of programmable electronic devices, a method to handle a communication link failure in said computer network, said method comprising the steps of:

instructing each said data replication facility of each of said plurality of programmable electronic devices to enter a logging routine when said host device of said data replication facility detects said communication link failure, wherein said logging routine halts said replicating of data by said replication facility of said host device and said replication facility of said host device identifies in a log each local write of said host device that detects said communication link failure;

instructing each said data replication facility of each of said plurality of programmable electronic devices that initiated said logging routine to generate a replica for each said local write identified in said log upon reestablishment of said communication link;

grouping each said replica into a single data set; and

forwarding said single data set in accordance with a communication protocol from a first of said plurality of programmable electronic devices to a second of said plurality of programmable electronic devices.

15. (Cancelled)

16. (Original) The method of claim 14, wherein said first of said plurality of programmable electronic devices forwards said single data set in a synchronous manner.

17. (Original) The method of claim 14, wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

18-20. (Cancelled)

21. (Currently Amended) ~~The readable medium of claim 19, further comprising the step of:~~ A readable medium holding programmable electronic device readable instructions to perform a method in a storage network to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first programmable electronic device in said storage network to enter a first state to log, one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition that does not allow transmission of data to said physically remote storage device;

determining at said first programmable electronic device when said first replica held by said physically remote storage device is available due an abatement of the detected error condition;

instructing said first data replication facility of said first programmable electronic device to replicate data corresponding to the one or more writes identified in said log in order to create a second replica upon determination by said first programmable electronic device that said first replica held by said physically remote storage device is available;

outputting said second replica in accordance with a communication protocol from said first programmable electronic device to a second data replication facility of a second programmable electronic device in communication with said physically remote storage device in said storage network to update said first replica; and

instructing said first data replication facility of said first programmable electronic device to automatically transmit said second replica to said second replication facility once creation of said second replica is complete.

22-26. (Cancelled)

27. (Currently Amended) ~~The readable medium of claim 19,~~ A readable medium holding programmable electronic device readable instructions to perform a method in a

storage network to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first programmable electronic device in said storage network to enter a first state to log, one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition that does not allow transmission of data to said physically remote storage device;

determining at said first programmable electronic device when said first replica held by said physically remote storage device is available due an abatement of the detected error condition;

instructing said first data replication facility of said first programmable electronic device to replicate data corresponding to the one or more writes identified in said log in order to create a second replica upon determination by said first programmable electronic device that said first replica held by said physically remote storage device is available;

outputting said second replica in accordance with a communication protocol from said first programmable electronic device to a second data replication facility of a second programmable electronic device in communication with said physically remote storage device in said storage network to update said first replica; and

wherein said outputting from said first data replication facility of said first programmable electronic device to said second data replication facility of said second programmable electronic device occurs in a synchronous manner.

28. (Currently Amended) The readable medium of claim 19, A readable medium holding programmable electronic device readable instructions to perform a method in a storage network to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first programmable electronic device in said storage network to enter a first state to log, one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition that does not allow transmission of data to said physically remote storage device;

determining at said first programmable electronic device when said first replica held by said physically remote storage device is available due an abatement of the detected error condition;

instructing said first data replication facility of said first programmable electronic device to replicate data corresponding to the one or more writes identified in said log in order

to create a second replica upon determination by said first programmable electronic device that said first replica held by said physically remote storage device is available;

outputting said second replica in accordance with a communication protocol from said first programmable electronic device to a second data replication facility of a second programmable electronic device in communication with said physically remote storage device in said storage network to update said first replica; and

wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

29. (Cancelled)

30. (Currently Amended) ~~The readable medium of claim 19,~~ A readable medium holding programmable electronic device readable instructions to perform a method in a storage network to update a first replica held by a physically remote storage device in said storage network, said method comprising the steps of:

instructing a first data replication facility of a first programmable electronic device in said storage network to enter a first state to log, one or more writes to a local storage device when said first replica held by said physically remote storage device is unavailable due to a detected error condition that does not allow transmission of data to said physically remote storage device;

determining at said first programmable electronic device when said first replica held by said physically remote storage device is available due an abatement of the detected error condition;

instructing said first data replication facility of said first programmable electronic device to replicate data corresponding to the one or more writes identified in said log in order to create a second replica upon determination by said first programmable electronic device that said first replica held by said physically remote storage device is available;

outputting said second replica in accordance with a communication protocol from said first programmable electronic device to a second data replication facility of a second programmable electronic device in communication with said physically remote storage device in said storage network to update said first replica; and

wherein said log comprises a bitmap to hold one or more pointers, wherein each of the one or more pointers indicate a location on a storage device written to during said first state.

31. (Cancelled)